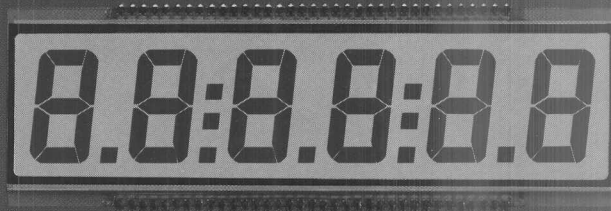


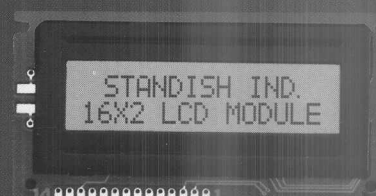
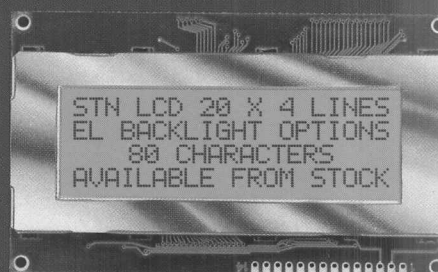
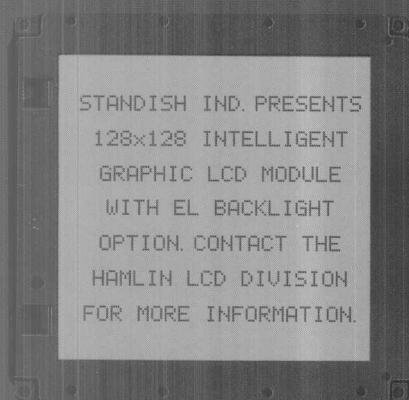
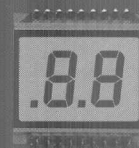


LIQUID CRYSTAL DISPLAYS



and

GRAPHIC and ALPHANUMERIC LCD MODULES



Standish LCD

Division of Standish Industries, Inc.



LCD TECHNOLOGY AND MANUFACTURING LEADER SINCE 1972 ...

Our involvement with liquid crystal display technology began in 1972 when Twisted Nematic (TN) LCDs were manufactured for use in portable instruments, counters, clocks and digital multimeters. Product evolution continued and "outdoor" type applications were made possible in 1977 through our extensive R&D efforts in LC materials, glass substrates and polarizer properties. In 1981, hybrid dichroic LCD technology was added to the product line. The ability to successfully manufacture multiplex TN LCDs became possible in 1982 with advances in fluid properties, LCD cell spacing techniques and improved photolithography methods. Negative image color ink process LCDs were added to our product offering in 1983.

In January 1989, Standish Industries acquired the LCD Division from Hamlin, Inc. The emphasis on product development continues with Standish LCD becoming the first North American company to manufacture, on a production basis, supertwist (STN) LCDs. In late 1989, Standish Industries introduced a complete LCD module product line featuring TN and STN LCDs with intelligent graphic and alphanumeric dot matrix formats, temperature range and backlight options.

OUR QUALITY IS ON DISPLAY

Standish Industries has developed a comprehensive statistical process control based Quality Assurance program. Every phase of our manufacturing is monitored from the inspection of raw materials to finished product Q.A. audit. This program maximizes product dependability and provides customers with high-reliability LCDs at the lowest cost possible. At Standish Industries, "Our quality is on display."

YOUR TOTAL STANDARD AND CUSTOM LCD SOURCE

The LCD modules and displays catalogued in this brochure are standard products available from stock or with a very short lead time. In the event one of our standard products does not meet your exact application requirements, a custom LCD can be an alternative. Our staff of engineers has the technology and know-how to develop a custom LCD tailored to fit your exact needs. You are invited to consult our LCD application specialists for design assistance at no charge. For information regarding Standish Industries custom LCD capabilities; phone 414/648-1000 or FAX 414/648-1001.



Standish Industries is the largest U.S. manufacturer of Liquid Crystal Displays. Located in Lake Mills, Wisconsin, this facility is headquarters for the Standish LCD division's totally integrated manufacturing, research, design, prototype and engineering operations. The facility serves customers worldwide, providing the manufacturing flexibility to produce small quantities, in a reasonable time, and very high volume requirements at competitive prices.



	PAGE		PAGE
Liquid Crystal Display Information	1	Specifications for Direct Drive and Multiplex LCDs	8
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Specifications for LCD Modules	3	Multiplex LCDs	10
Alphanumeric Dot Matrix LCD Modules	3-6	Sales Representative Listing	BC
Intelligent Graphic LCD Modules	6-8	Other Products Available from Standish LCD	BC

PART NUMBER INDEX

Alphanumeric Dot Matrix LCD Modules

MODEL NUMBER	LCD TYPE [√]	BACKLIGHT	MODULE DESCRIPTION	PAGE
SIM81XXX-TLC-XX —	TN	None	8 characters x 1 line	3
SIM81XXX-TLC-LE —	TN	LED	8 characters x 1 line	3
SIM161XXX-TLC-XX —	TN	None	16 characters x 1 line	4
SIM161XXX-TLC-EL —	TN	EL	16 characters x 1 line	4
SIM161XXX-TLC-LE —	TN	LED	16 characters x 1 line	4
SIM162XXX-TLC-XX —	TN	None	16 characters x 2 lines	4
SIM162XXX-SLC-XX —	STN	None	16 characters x 2 lines	4
SIM162XXX-TLC-EL —	TN	EL	16 characters x 2 lines	4
SIM162XXX-SLC-LE —	STN	EL	16 characters x 2 lines	4
SIM162XXX-TLC-LE —	TN	LED	16 characters x 2 lines	4
SIM162XXX-SLC-LE —	STN	LED	16 characters x 2 lines	4
SIM202XXX-TLC-XX —	TN	None	20 characters x 2 lines	5
SIM202XXX-SLC-XX —	STN	None	20 characters x 2 lines	5
SIM202XXX-TLC-LE —	TN	LED	20 characters x 2 lines	5
SIM202XXX-SLC-LE —	STN	LED	20 characters x 2 lines	5
SIM402XXX-TLC-XX —	TN	None	40 characters x 2 lines	5
SIM402XXX-SLC-XX —	STN	None	40 characters x 2 lines	5
SIM402XXX-TLC-EL —	TN	EL	40 characters x 2 lines	5
SIM402XXX-SLC-EL —	STN	EL	40 characters x 2 lines	5
SIM402XXX-TLC-LE —	TN	LED	40 characters x 2 lines	5
SIM402XXX-SLC-LE —	STN	LED	40 characters x 2 lines	6
SIM204XXX-SLC-XX —	STN	None	20 characters x 4 lines	6
SIM204XXX-SLC-EL —	STN	EL	20 characters x 4 lines	6
SIM204XXX-SLC-LE —	STN	LED	20 characters x 4 lines	6

Note: DC/AC Converter for EL backlight not supplied.

[√]TN= Twisted Nematic

STN= Supertwist

Intelligent Graphic LCD Modules

SIM24064X-SLC-XX —	STN	None	240 x 64 pixels	6
SIM24064X-SLC-EL —	STN	EL	240 x 64 pixels	6
SIM128128-SLC-XX —	STN	None	128 x 128 pixels	7
SIM128128-SLC-EL —	STN	EL	128 x 128 pixels	7
SIM16080X-SLC-XX —	STN	None	160 x 80 pixels	7
SIM16080X-SLC-EL —	STN	EL	160 x 80 pixels	7
SIM480128B-SLC-XX —	STN	None	480 x 128 pixels	8
SIM480128B-SLC-EL —	STN	EL	480 x 128 pixels	8

Note: DC/AC Converter is supplied on Graphic Modules with EL backlight.

Direct Drive Liquid Crystal Displays

MODEL NUMBER	DESCRIPTION†	GLASS SIZE	PAGE
3900-365-920	4.0 digit (.35") 40 contacts	2.00" x 0.90", 0.70"	9
3901-365-920	3.5 digit (.5") 40 contacts	2.00" x 1.20", 0.90"	9
3902-365-920	3.5 digit (.5") 40 contacts	2.00" x 1.20", 0.90"	9
3906-365-920	4.0 digit (.5") 40 contacts	2.00" x 1.20", 0.90"	9
3918-365-920	6.0 digit (.5") 50 contacts	2.75" x 1.20", 0.90"	9
3919-365-420	6.0 digit (.7") 50 contacts	3.70" x 1.50", 1.20"	9
3920-365-420	6.0 digit (1.0") 70 contacts	5.40" x 1.80", 1.50"	9
3922-365-920	8.0 digit (.5") 68 contacts	3.70" x 1.20", 0.90"	10
3935-365-920	2.0 digit (.5") 18 contacts	1.20" x 1.20", 0.90"	10
3940-365-920	3.0 digit (.35") 24 contacts	1.20" x 0.90", 0.70"	10
3975-365-920	Single 32-bar graph, 35 contacts	4.00" x 1.20", 0.90"	10

Multiplex Liquid Crystal Displays

4201-365-420	4.5 digit (.4") 20 contacts	2.00" x 1.05", 0.90"	10
4284-365-420	8.0 character 1 x 8(.400")	2.50" x 0.90", 0.60"	10
4285-365-420	16 character 1 x 16(.300")	4.70" x 1.20", 1.10"	10

† With some displays not all pins/contacts used.

OPERATING CHARACTERISTICS

ALPHANUMERIC DOT MATRIX MODULES (page 3-6)

SPECIFICATIONS	
Power Supply for Controller (VDD-VSS)	7.0V (Max.)
Power Supply for LCD Driver (VDD-VO)	13.5V (Max.)
Input Voltage (VI)	VSS (Min.), VDD (Max.)
Operating Temperature	0° to +50°C
Storage Temperature	-20° to +70°C
Input Voltage-High (VIH)	2.2V (Min.)
Input Voltage-Low (VIL)	0.6V (Max.)
Output Voltage-High (VOH)	@-I _{OH} =0.2mA, 2.4V (Min.)
Output Voltage-Low (VOL)	@I _{OL} =1.2mA, 0.4V (Max.)
Power Supply Current (IDD)	0.5mA (Typ.), 2.0mA (Max.)
Supply Voltage for LCD Driver	-HV (Typ.), -LV (Max.)
VDD-VO	@ 0°C, 6.20V (Typ.), 3.6V (Max.)
	@ 25°C, 5.75V (Typ.), 3.0V (Max.)
	@ 50°C, 5.30V (Typ.), 2.3V (Max.)
Viewing Angle	6 o'clock standard

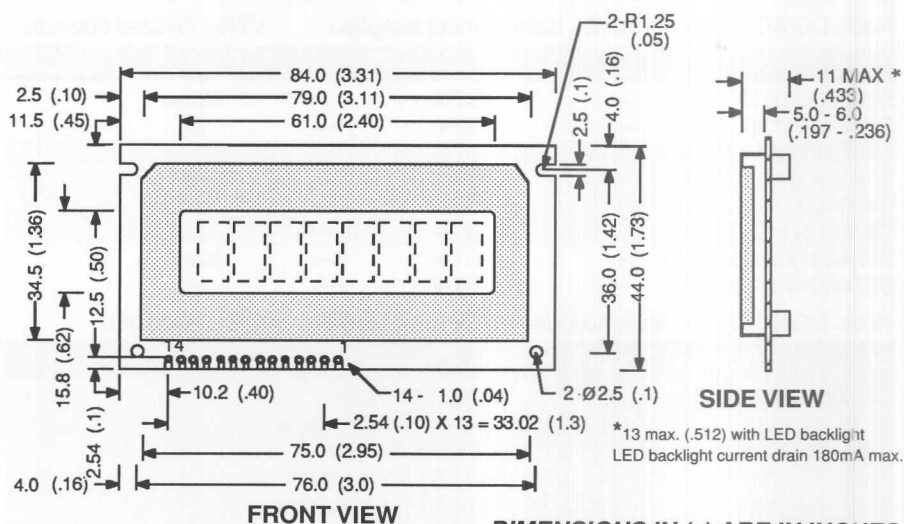
INTELLIGENT GRAPHIC MODULES (page 6-8)

SPECIFICATIONS	MIN.	TYP.	MAX.
Supply Voltage (VDD)	4.5V	5.0V	5.5V
Module Supply Current (IDD)	-	25mA	40mA
Module Supply Current W/EL on	-	100mA	-
Input Voltage-High (VIH) (Except EL & Audio Input)	2.2V	-	VDD
Input Voltage-Low (VIL) (Except EL & Audio Input)	0	-	0.8V
Output Voltage-High (VOH) @-IOH=0.6mA	VDD-0.4V	-	VDD
Output Voltage-Low (VOL) @-IOH=0.6mA	0	-	0.4V
Res Input-High (VIHR)	3.0V	-	VDD
Enable Cycle Time (tcyc)	1.0μs	-	-
Enable Pulse Width (tWEH & tWEL)	0.45μs	-	-
Enable Rise Time (tEr)	-	-	25ns
Enable Fall Time (tEf)	-	-	25ns
Set-Up Time (tAS)	140ns	-	-
Data Set-Up Time (tDSW)	225ns	-	-
Data Delay Time (tDDR)	-	-	225ns
Address Hold Time (tAH)	10ns	-	-
Data Hold Time-Write (tDHW)	10ns	-	-
Data Hold Time-Read (tDHR)	20ns	-	-
Buzzer Input Frequency @VIH=2.2V, VIL=0.2V, 50% Duty, VOL=0.5dB @10cm	1.5kHz	-	3.0kHz
Pull Down Resistor for ELCNT-Input. (RD)	470Ω	-	-
Viewing Angle...6 o'clock standard			

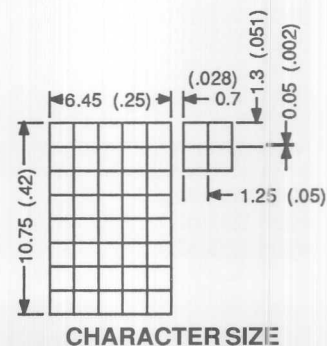
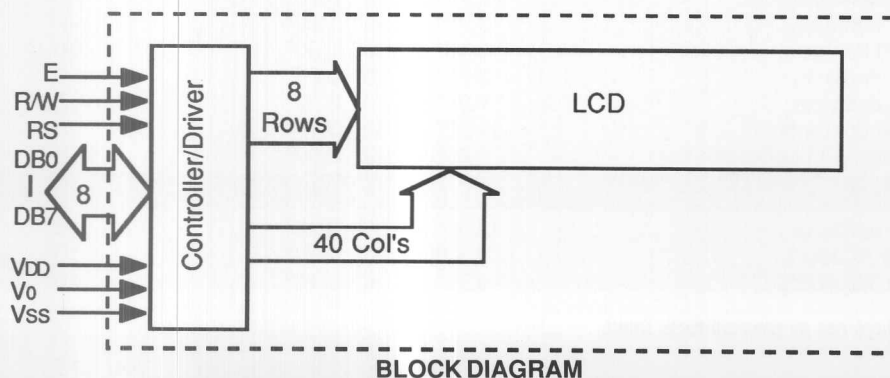
ALPHANUMERIC DOT MATRIX

8 Characters x 1 Line

SIM81XXXX-TLC-XX
SIM81XXXX-TLC-LE



DIMENSIONS IN () ARE IN INCHES





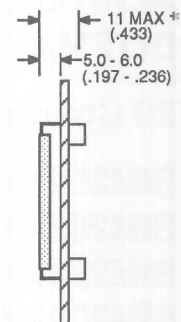
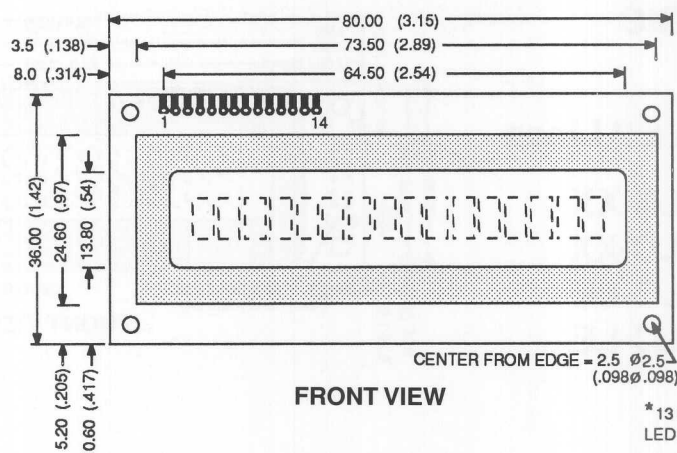
ALPHANUMERIC DOT MATRIX

16 Characters x 1 Line

SIM161XXX-TLC-XX

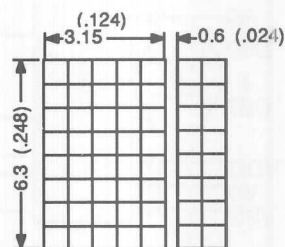
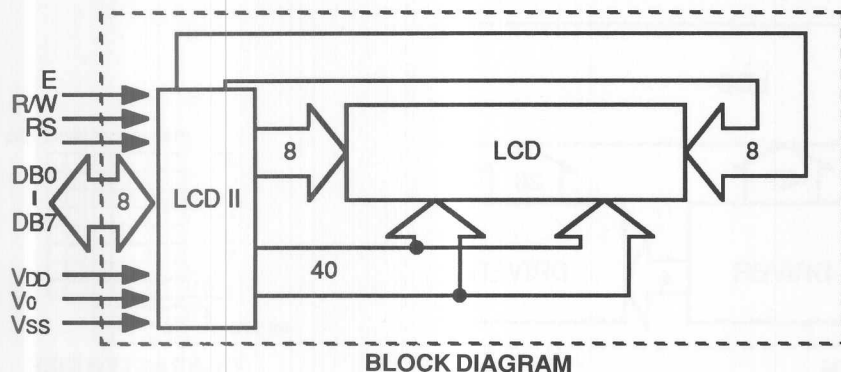
SIM161XXX-TLC-EL

SIM161XXX-TLC-LE



* 13 max. (.512) with LED backlight
LED backlight current drain 200mA max.

DIMENSIONS IN () ARE IN INCHES



ALPHANUMERIC DOT MATRIX

16 Characters x 2 Lines

SIM162XXX-TLC-XX

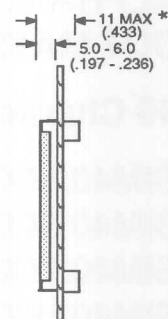
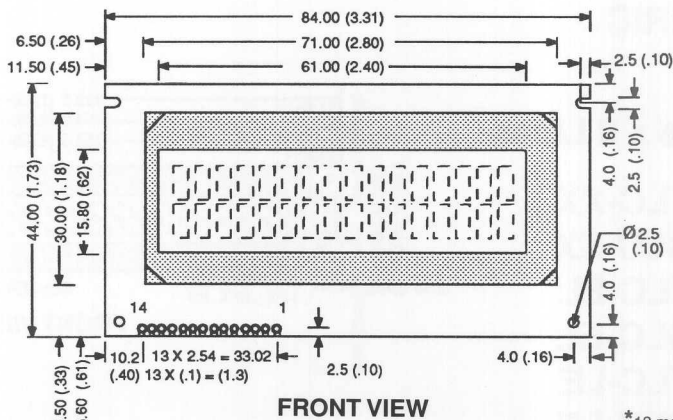
SIM162XXX-SLC-XX

SIM162XXX-TLC-EL

SIM162XXX-SLC-EL

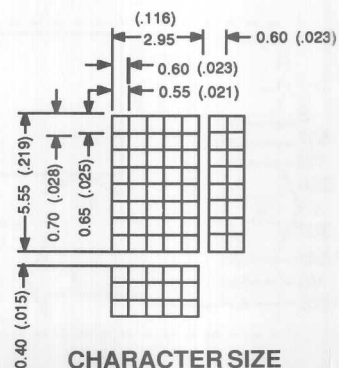
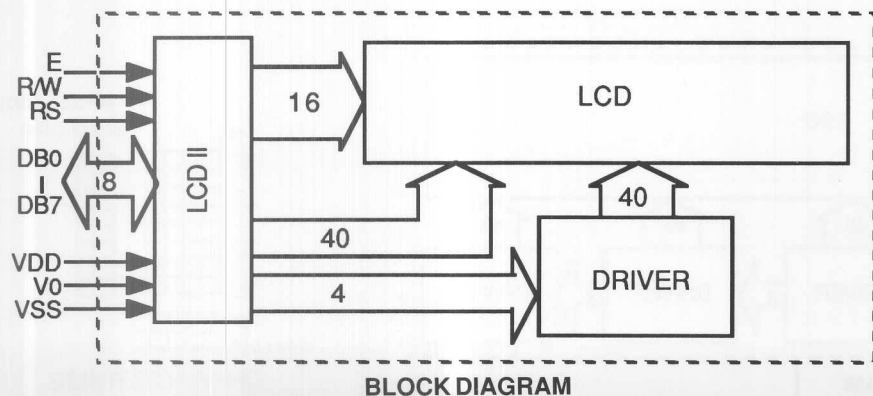
SIM162XXX-TLC-LE

SIM162XXX-SLC-LE



* 13 max. (.512) with LED backlight
LED backlight current drain 180mA max.

DIMENSIONS IN () ARE IN INCHES



ALPHANUMERIC DOT MATRIX

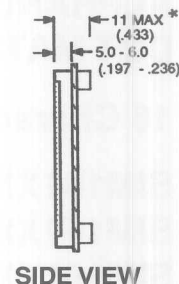
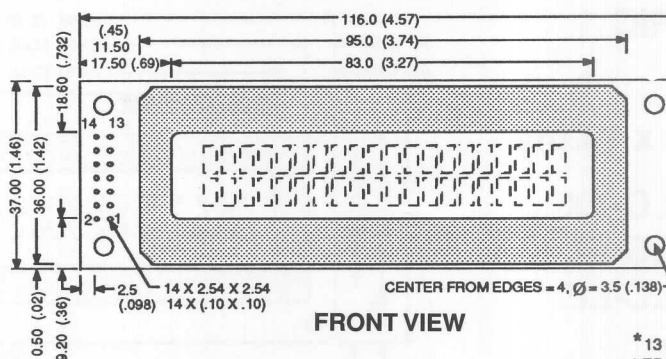
20 Characters x 2 Lines

SIM202XXX-TLC-XX

SIM202XXX-SLC-XX

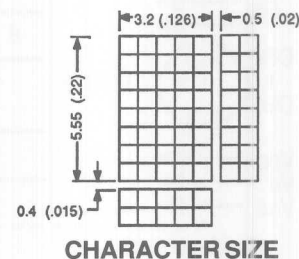
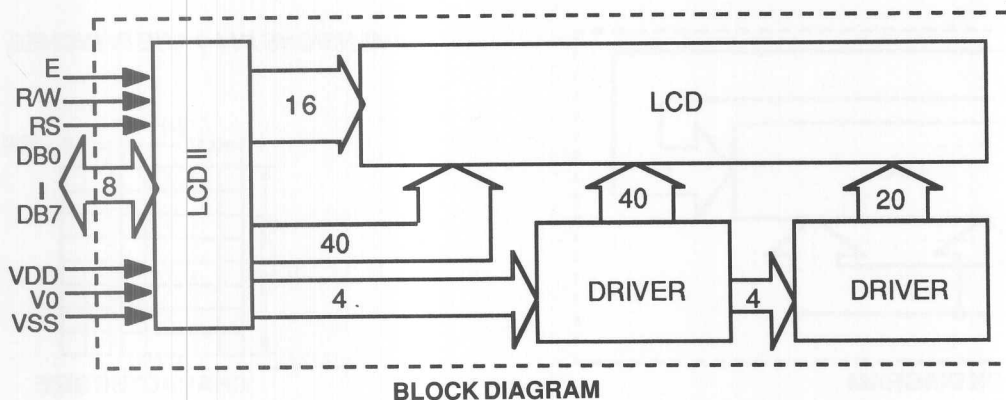
SIM202XXX-TLC-LE

SIM202XXX-SLC-LE



* 13 max. (.512) with LED backlight
LED backlight current drain 360mA max.

DIMENSIONS IN () ARE IN INCHES



ALPHANUMERIC DOT MATRIX

40 Characters x 2 Lines

SIM402XXX-TLC-XX

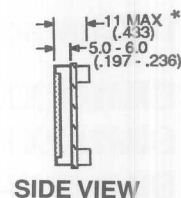
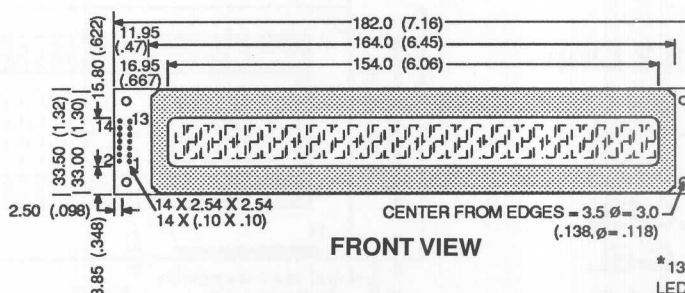
SIM402XXX-SLC-XX

SIM402XXX-TLC-EL

SIM402XXX-SLC-EL

SIM402XXX-TLC-LE

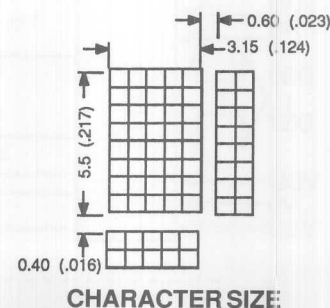
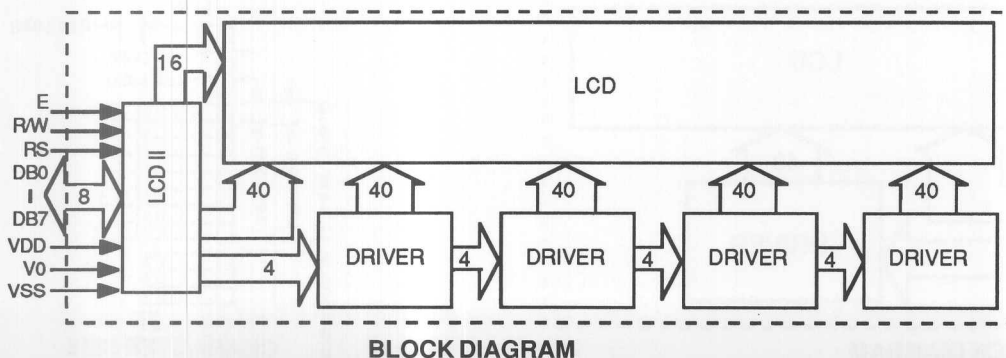
SIM402XXX-SLC-LE



* 13 max. (.512) with LED backlight
LED backlight current drain 680mA max.

Chrome Bezel Standard
Black Bezel Available — Consult factory.

DIMENSIONS IN () ARE IN INCHES



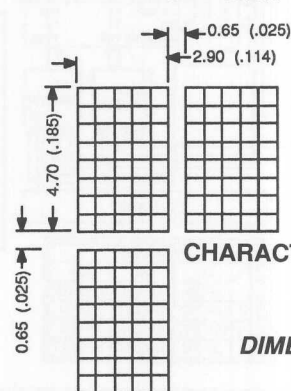
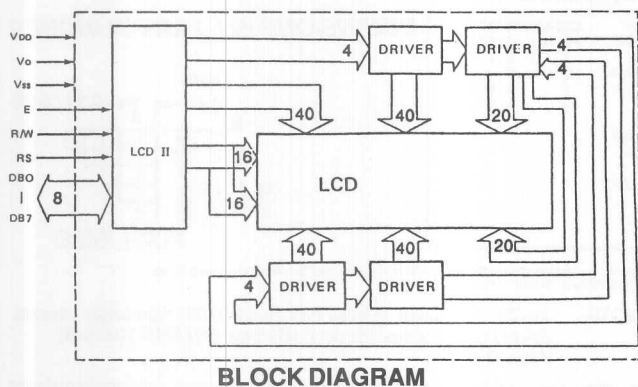
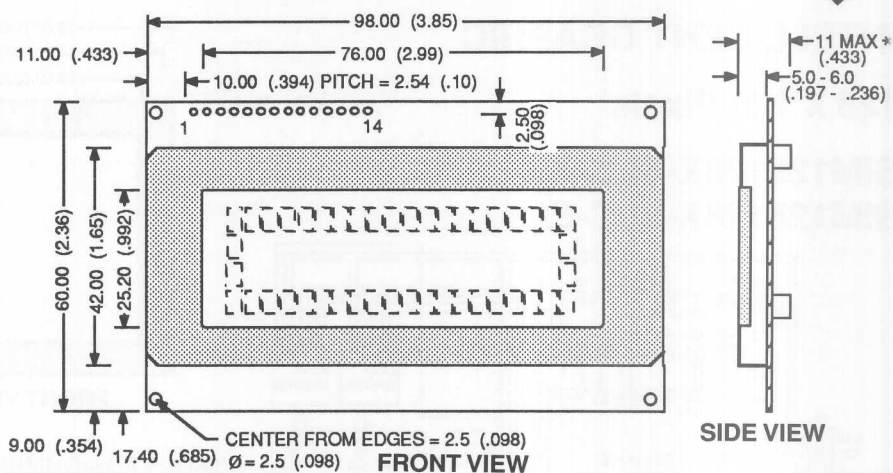
ALPHANUMERIC DOT MATRIX

20 Characters x 4 Lines

SIM204XXX-SLC-XX

SIM204XXX-SLC-EL

SIM204XXX-SLC-LE



* 13 max. (.512) with LED backlight
LED backlight current drain 480mA max.

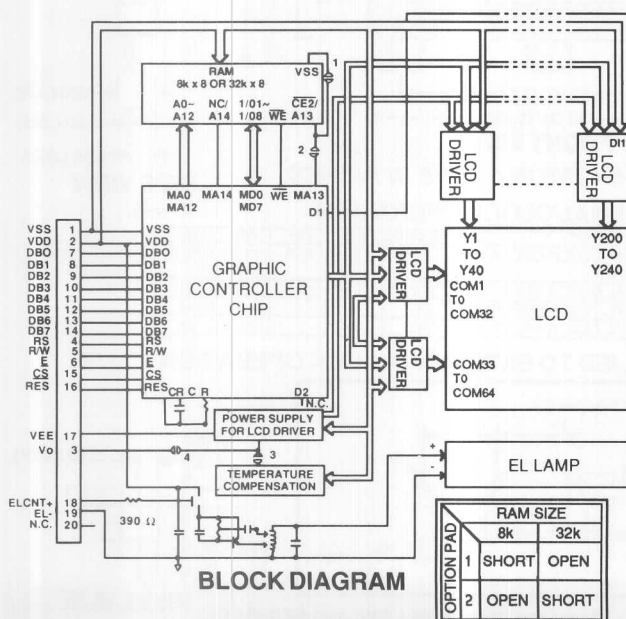
DIMENSIONS IN () ARE IN INCHES

INTELLIGENT GRAPHIC

240 x 64 Pixels

SIM24064X-SLC-XX

SIM24064X-SLC-EL



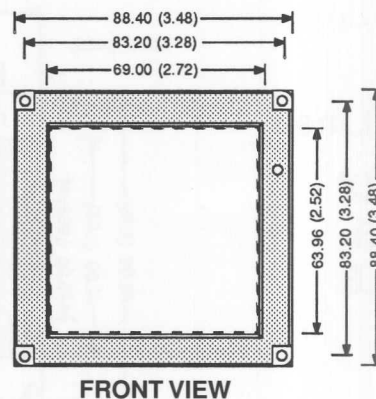
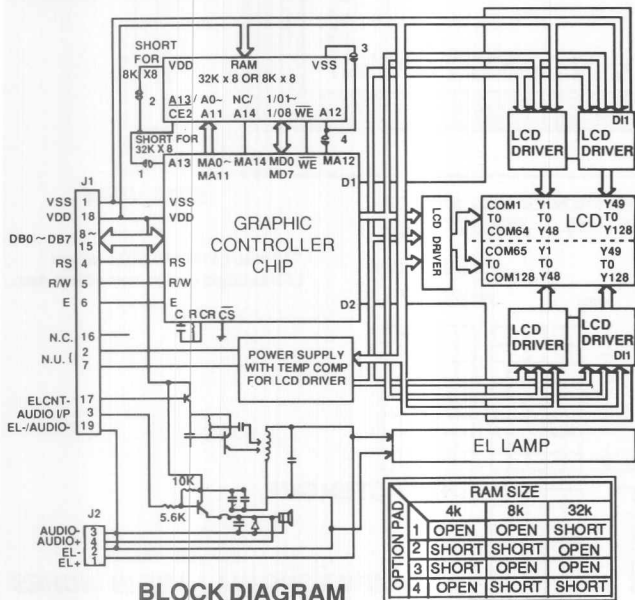


INTELLIGENT GRAPHIC

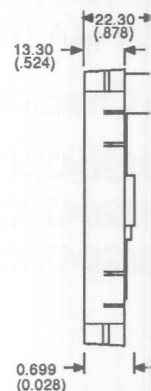
128 x 128 Pixels

SIM128128X-SLC-XX

SIM128128X-SLC-EL



FRONT VIEW

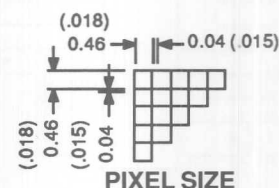


SIDE VIEW

PIN-OUT ASSIGNMENT

CONNECTOR "J1"	PIN NO.	SYMBOL	CONNECTOR "J2"	PIN NO.	SYMBOL
1	VSS		1	EL+	
3	AUDIO I/P		2	EL-	
4	RS		3	AUDIO-	
5	RAW		4	AUDIO+	
8-15	DB0-DB7				
17	ELCNT-				
18	VDD				
19	EL-/AUDIO-				
16	N.C.				
2, 7	N.U.				

DIMENSIONS IN () ARE IN INCHES



PIXEL SIZE

NOTE: EL-/AUDIO- IS THE RETURN PATH FOR AUDIO AND EL DRIVER AND HAS TO BE CONNECTED TO VSS EXTERNAL.

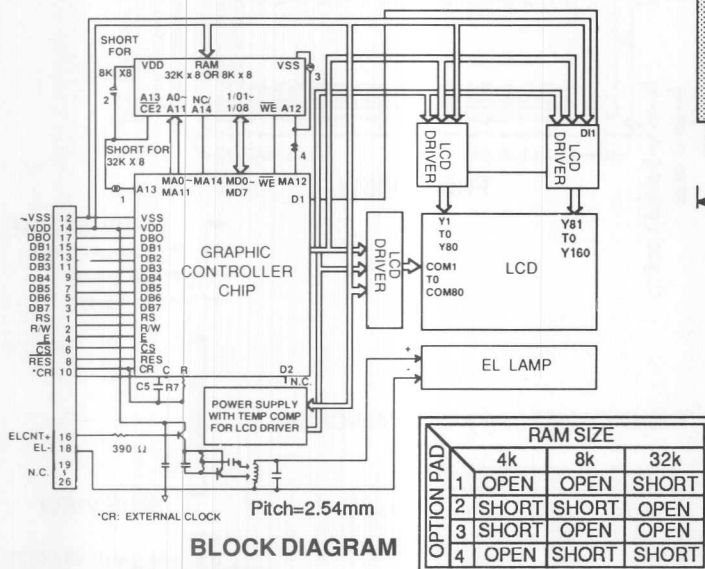
NOTE: J1=ZIF Connector (Molex P/N 39-51-3193) right angle version
J2=AUX. Connector (Socket) (Samtec P/N SSA-104-S-G)
Pitch=2.54mm

INTELLIGENT GRAPHIC

160 x 80 Pixels

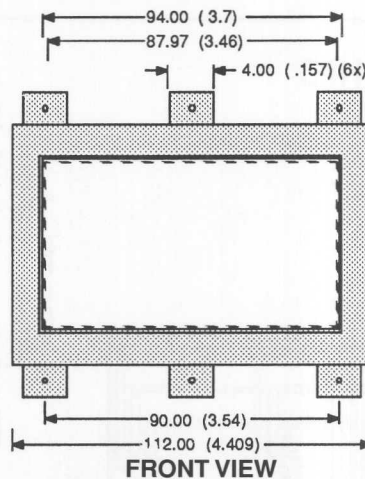
SIM16080X-SLC-XX

SIM16080X-SLC-EL



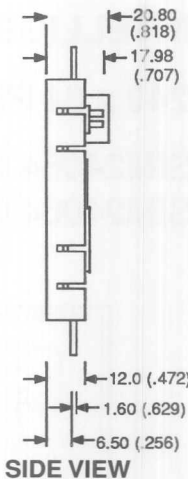
PIN-OUT ASSIGNMENT

PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	RS	6	CS	11	DB3	16	ELCNT+
2	R/W	7	DB5	12	VSS	17	DB0
3	DB7	8	RES	13	DB2	18	EL-
4	E	9	DB4	14	VDD	19-26	N.C.
5	DB6	10	CR	15	DB1		



FRONT VIEW

DIMENSIONS IN () ARE IN INCHES

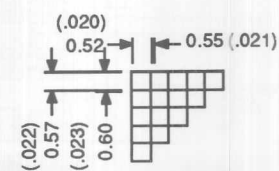
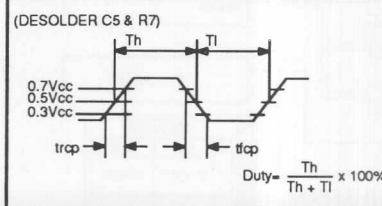


SIDE VIEW

EXTERNAL CLOCK OPERATION

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
EXTERNAL CLOCK OPERATING FREQUENCY	lcp	100	500	1100	KHz
EXTERNAL CLOCK DUTY	duty	47.5	50	52.5	%
EXTERNAL CLOCK RISE TIME	trcp	-	-	0.05	μs
EXTERNAL CLOCK FALL TIME	tlcp	-	-	0.05	μs

APPLIED TO EXTERNAL CLOCK OPERATION



PIXEL SIZE

NOTE: Connector (Samtec P/N TSW-113-04-T-D-LC)

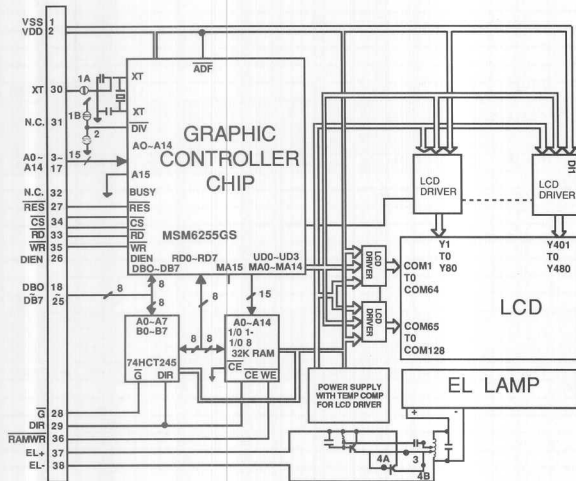


INTELLIGENT GRAPHIC

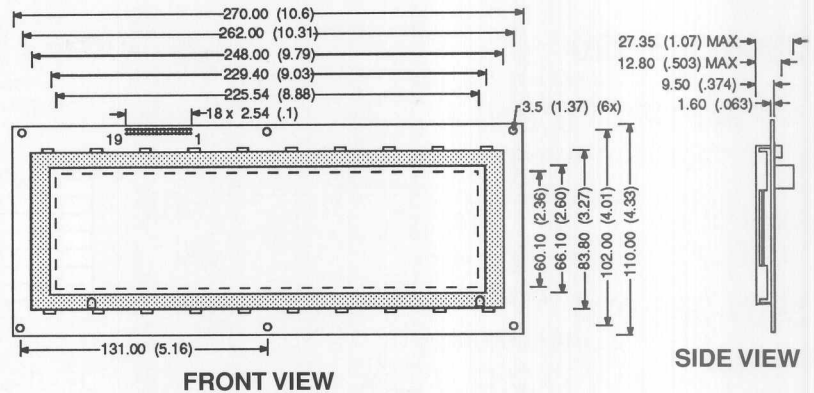
480 x 128 Pixels

SIM480128B-SLC-XX

SIM480128B-SLC-EL



BLOCK DIAGRAM



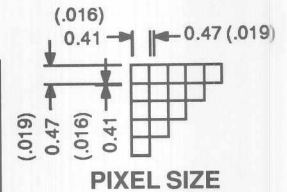
FRONT VIEW

SIDE VIEW

DIMENSIONS IN () ARE IN INCHES

PIN-OUT ASSIGNMENT

PIN NO.	SYMBOL	PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	VSS	28	G	34	CS
2	VDD	29	DIR	35	WR
3-17	A0-A14	30	XT	36	RAMWR
18-25	DB0-DB7	31	N.C.	37	EL+
26	D1EN	32	N.C.	38	EL-
27	RES	33	RD		



PIXEL SIZE



OPERATING CHARACTERISTICS

DIRECT DRIVE LCDs (page 9-10)

	Min.	Typ.	Max.	Units
Operating Voltage	4	7	15	Vrms
DC Drive Component Allowable	-	50	-	mV
Operating Frequency Range	30	60	100	Hz
Current (all segments on)*	-	5	20	μA
Capacitance (all segments on)*	-	3000	-	pF
DC Resistance (all segments on)*	-	50	-	MΩ
Visual Threshold				
10% ON @ 25°C	-	2.2	-	Vrms
10% ON @ 0°C	-	2.4	-	Vrms
90% ON @ 25°C	-	3.1	-	Vrms
90% ON @ 0°C	-	3.2	-	Vrms
Typical Response Time*				
(T on and T off) at 25°C		Less than 50ms total		
Segment ON (TA = 25°C)	-	15	20	ms
Segment OFF (TA = 25°C)	-	30	60	ms
Segment ON (TA = 0°C)	-	50	180	ms
Segment OFF (TA = 0°C)	-	150	320	ms
Contrast Ratio	-	20:1	-	CR
Operating Temperature Range	-20	-	+85	°C
Storage Temperature Range	-55	-	+85	°C
Expected Life	-	100,000	-	Hours
Viewing Angle — From Normal	-	±75° @ 7V	-	-
	-	±60° @ 6V	-	-
	-	±45° @ 5V	-	-
Viewing Mode		Black segments against silver transfective background.		
Connection Method		Standard DIL pins (0.25" length)		

For a 4 digit (1/2") instrument LCD (3906)

1 Typical combined ON and OFF times of: 0.8 sec @ -20°C

MULTIPLEX LCDs (page 10)

	Min.	Typ.	Max.	Units
DC Drive Component Allowable	-	-	-	-
Operating Frequency Range	30	-	250	Hz
Current Consumption*	-	3	5	μA/cm²
Capacitance	-	1200	-	pF/cm²
V10	-	2.2	-	Vrms
V90	-	3.1	-	Vrms
dv/dt	-	-9	-	mV/°C
Typical Response Time*				
T on @ 25°C	-	15	-	msec
T off @ 25°C	-	30	-	msec
T on @ 0°C	-	50	-	msec
T off @ 0°C	-	150	-	msec
Operating Temperature Range**	-20	-	+80	°C
Storage Temperature Range	-55	-	+80	°C
Viewing Mode		Black segments against silver transfective background.		
Connection Method		Standard DIL/SIL pins (0.25" length)		

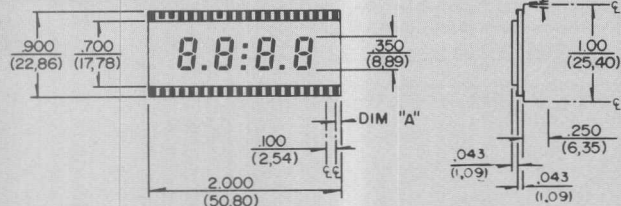
* Test Voltage = 6 Vrms @ 60 Hz

** Minimum operating temperature is chosen as temperature at which one update per second is possible. Temperature compensation may be required to realize satisfactory operation over entire operating temperature range.

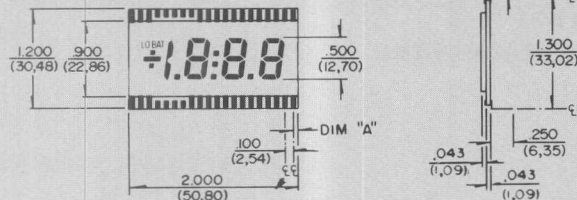


DIRECT DRIVE

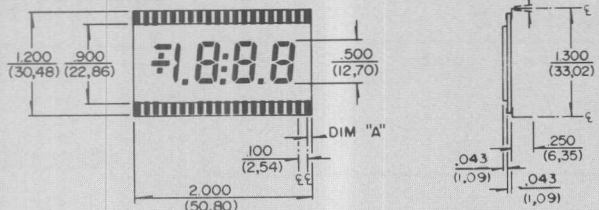
3900-365-920



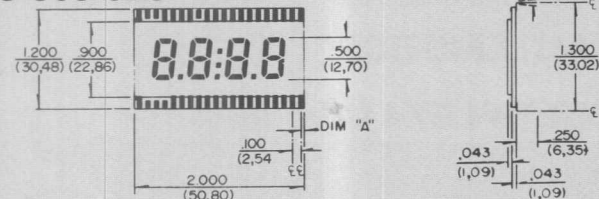
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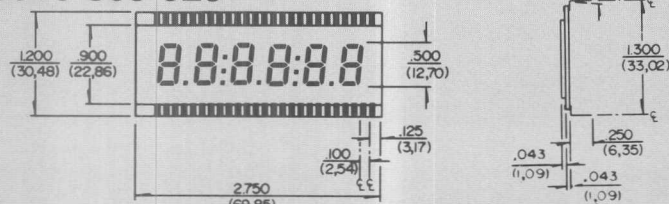
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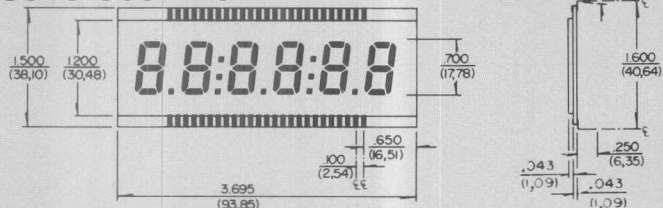
3906-365-920



3918-365-920



3919-365-420

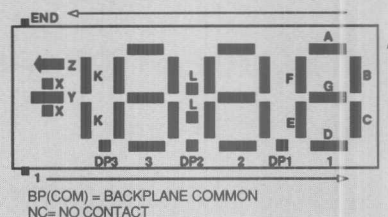


3920-365-420



PIN-OUT ASSIGNMENT

Pin-out sequences begin with the first pin located in the lower left corner of the LCD and continue to the right, with the last pin number in the top left corner. Digits are numbered from right to left.



Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	9	E3	17	E1	25	A2	33	NC
2	NC	10	D3	18	D1	26	F2	34	B4
3	NC	11	C3	19	C1	27	G2	35	A4
4	NC	12	DP2	20	B1	28	L	36	F4
5	E4	13	E2	21	A1	29	B3	37	G4
6	D4	14	D2	22	F1	30	A3	38	NC
7	C4	15	C2	23	G1	31	F3	39	NC
8	DP3	16	DP1	24	B2	32	G3	40	BP (COM)

Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	9	E3	17	E1	25	A2	33	NC
2	Y	10	D3	18	D1	26	F2	34	NC
3	K	11	C3	19	C1	27	G2	35	NC
4	NC	12	DP2	20	B1	28	L	36	NC
5	NC	13	E2	21	A1	29	B3	37	NC
6	NC	14	D2	22	F1	30	A3	38	Z
7	NC	15	C2	23	G1	31	F3	39	X
8	DP3	16	DP1	24	B2	32	G3	40	BP (COM)

Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	9	E3	17	E1	25	A1	33	NC
2	NC	10	D3	18	D1	26	F1	34	NC
3	K	11	C3	19	C1	27	G1	35	NC
4	NC	12	DP2	20	B1	28	L	36	NC
5	NC	13	E2	21	A1	29	B3	37	NC
6	NC	14	D2	22	F1	30	A3	38	Z
7	NC	15	C2	23	G1	31	F3	39	X
8	DP3	16	DP1	24	B1	32	G3	40	BP (COM)

Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	9	E3	17	E1	25	A2	33	NC
2	NC	10	D3	18	D1	26	F2	34	B4
3	NC	11	C3	19	C1	27	G2	35	A4
4	NC	12	DP2	20	B1	28	L	36	F4
5	E4	13	E2	21	A1	29	B3	37	G4
6	D4	14	D2	22	F1	30	A3	38	NC
7	C4	15	C2	23	G1	31	F3	39	NC
8	E3	16	DP1	24	B2	32	G3	40	BP (COM)

Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	11	D4	21	DP1	31	F2	41	G4
2	E6	12	C4	22	E1	32	G2	42	L2
3	D6	13	DP3	23	D1	33	L1	43	B5
4	C6	14	E3	24	C1	34	B3	44	A5
5	DP5	15	D3	25	B1	35	A3	45	F5
6	E5	16	C3	26	A1	36	F3	46	G5
7	D5	17	DP2	27	F1	37	G3	47	B6
8	C5	18	E2	28	G1	38	B4	48	A6
9	DP4	19	D2	29	B2	39	A4	49	F6
10	E4	20	C2	30	A2	40	F4	50	G6

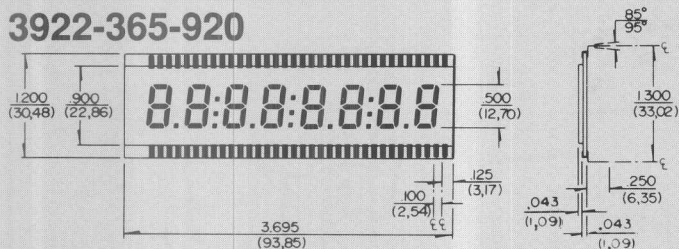
Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	11	D4	21	DP1	31	F2	41	G4
2	E6	12	C4	22	E1	32	G2	42	L2
3	D6	13	DP3	23	D1	33	L1	43	B5
4	C6	14	E3	24	C1	34	B3	44	A5
5	DP5	15	D3	25	B1	35	A3	45	F5
6	E5	16	C3	26	A1	36	F3	46	G5
7	D5	17	DP2	27	F1	37	G3	47	B6
8	C5	18	E2	28	G1	38	B4	48	A6
9	DP4	19	D2	29	B2	39	A4	49	F6
10	E4	20	C2	30	A2	40	F4	50	G6

Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	15	NC	29	NC	43	G2	57	NC
2	E6	16	C4	30	NC	44	L1	58	A4
3	D6	17	NC	31	C2	45	NC	59	F4
4	C6	18	DP3	32	DP1	46	B3	60	G4
5	DP5	19	E3	33	E1	47	NC	61	L2
6	E5	20	D3	34	D1	48	NC	62	B5
7	D5	21	NC	35	C1	49	NC	63	A5
8	C5	22	NC	36	B1	50	A3	64	F5
9	DP4	23	NC	37	A1	51	F3	65	G5
10	E4	24	C3	38	F1	52	G3	66	B6
11	D4	25	NC	39	G1	53	NC	67	A6
12	NC	26	DP2	40	B2	54	NC	68	F6
13	NC	27	E2	41	A2	55	B4	69	G6
14	NC	28	D2	42	F2	56	NC	70	BP (COM)



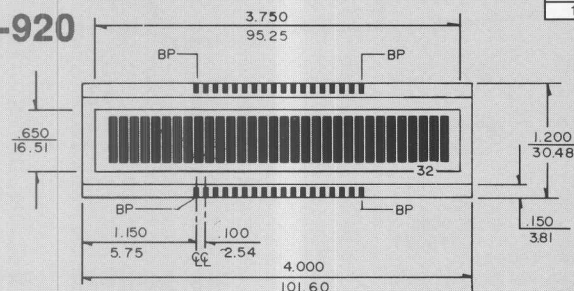
DIRECT DRIVE

3922-365-920



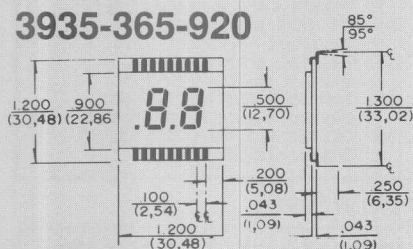
Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	15	E5	29	C2	43	B3	57	A6
2	E8	16	D5	30	DP1	44	A3	58	F6
3	D8	17	C5	31	E1	45	F3	59	G6
4	C8	18	DP4	32	D1	46	G3	60	L3
5	DP7	19	E4	33	C1	47	B4	61	B7
6	E7	20	D4	34	B1	48	A4	62	A7
7	D7	21	C4	35	A1	49	F4	63	F7
8	C7	22	DP3	36	F1	50	G4	64	G7
9	DP6	23	E3	37	G1	51	L2	65	B8
10	NC	24	D3	38	B2	52	B5	66	A8
11	E6	25	C3	39	A2	53	A5	67	F8
12	D6	26	DP2	40	F2	54	F5	68	G8
13	C6	27	E2	41	G2	55	G5		
14	DP5	28	D2	42	L1	56	B6		

3975-365-920



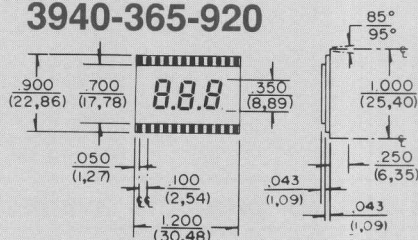
Pin No.	Segment	Pin No.	Segment	Pin No.	Segment	Pin No.	Segment
1	BP (COM)	10	L15	20	L2	29	L20
2	L31	11	L13	21	L4	30	L22
3	L29	12	L11	22	L6	31	L24
4	L27	13	L9	23	L8	32	L26
5	L25	14	L7	24	L10	33	L28
6	L23	15	L5	25	L12	34	L30
7	L21	16	L3	26	L14	35	L32
8	L19	17	L1	27	L16	36	BP (COM)
9	L17	18, 19	BP (COM)	28	L18		

3935-365-920



Pin No.	Segment	Pin No.	Segment
1	BP (COM)	10	B1
2	DP2	11	A1
3	E2	12	F1
4	D2	13	G1
5	C2	14	B2
6	DP1	15	A2
7	E1	16	F2
8	D1	17	G2
9	C1	18	BP

3940-365-920

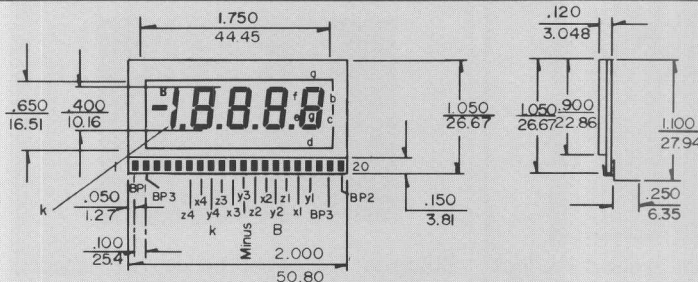


Pin No.	Segment	Pin No.	Segment
1	E3	13	A1
2	D3	14	F1
3	C3	15	G1
4	DP2	16	B2
5	E2	17	A2
6	D2	18	F2
7	C2	19	G2
8	DP1	20	B3
9	E1	21	A3
10	D1	22	F3
11	C1	23	G3
12	B1	24	BP (COM)

MULTIPLEX- NUMERIC

4 1/2 Digit 3 Backplane

4201-365-420



X = a, d, g
Y = b, c,
Z = e, f, DF

BP1 = a, b, f
BP2 = c, e, g
BP3 = d, DP, k, B
minus

MULTIPLEX - DOT MATRIX

8 Character

(1 x 8) 5 x 7

4284-365-420

NOTE:

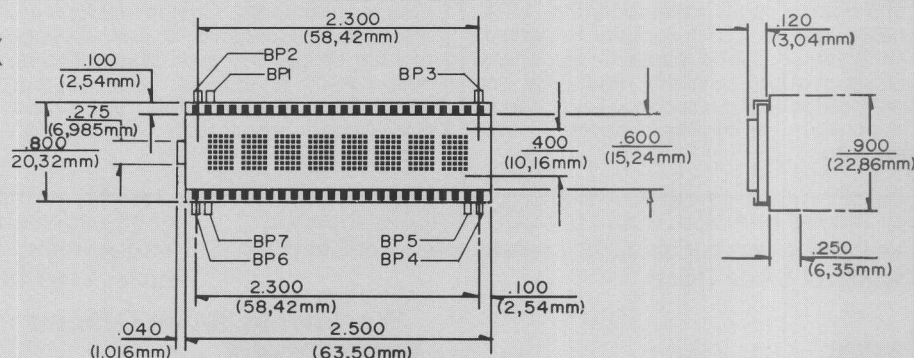
Character height = .300 (7.62)

Character width = .210 (5.334)

Individual dot size = .034 x .034

 $(.8636 \times .8636)$

Space between dots = .010 (.254)



16 Character

(1 x 16) 5 x 7

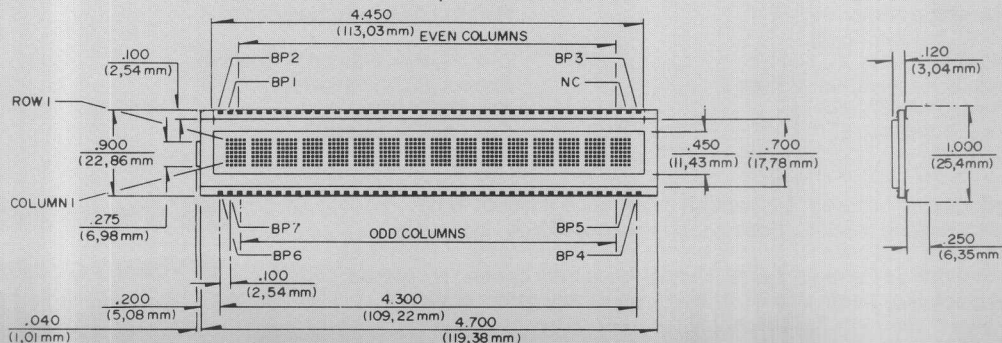
4285-365-420

NOTE:

Character height = .300 (7.62)

Character width = .210 (5.334)

Individual dot size = .034 x .034

 $(.8636 \times .86$ 

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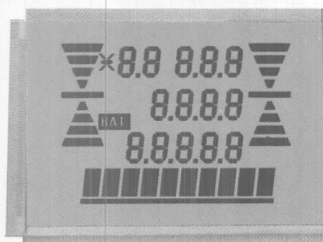


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Other LCD products available from Standish Industries

SUPERTWIST (STN) LCDs



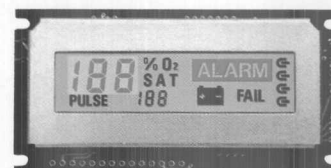
Standish Industries has become the first U. S. manufacturer to develop the technology and manufacturing skills necessary to build custom Supertwist (STN) liquid crystal displays. Supertwist LCDs provide excellent readability and bold contrast of character to background, even when the display is viewed at wide angles.

CUSTOM LCDs



Standish Industries technology offers flexibility of format design to complement your requirements. Custom designs are relatively inexpensive to tool. Options include unique symbols, glass shapes, "MIL-SPEC" conditions, color options, etc. Consult Standish Industries application specialists for design assistance.

CUSTOM LCD MODULES



Standish Industries custom LCD modules combine the unique product features of a custom component yet offer the user the ease and simplicity of a standard LCD module product. LCD types available include TN and STN; backlight options are electro-luminescent and LED. PCB size, bezel material and drive technique can also be modified to suit your requirements.

For more information about our LCD Modules shown in this catalog or custom LCDs, contact your local Standish Industries Sales Office.

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